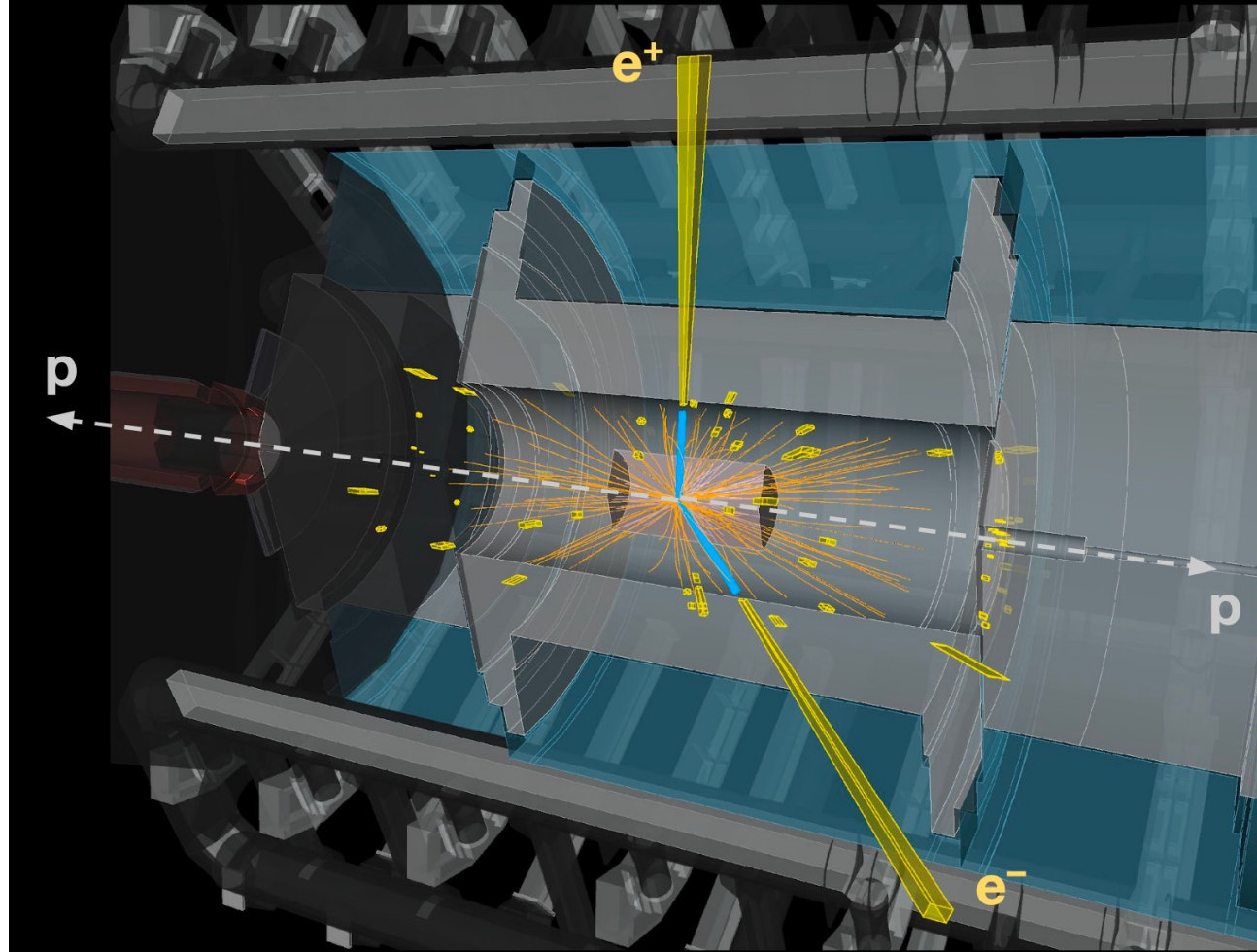


ATLAS Forward Proton Detector Alignment

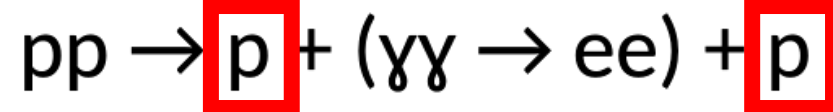
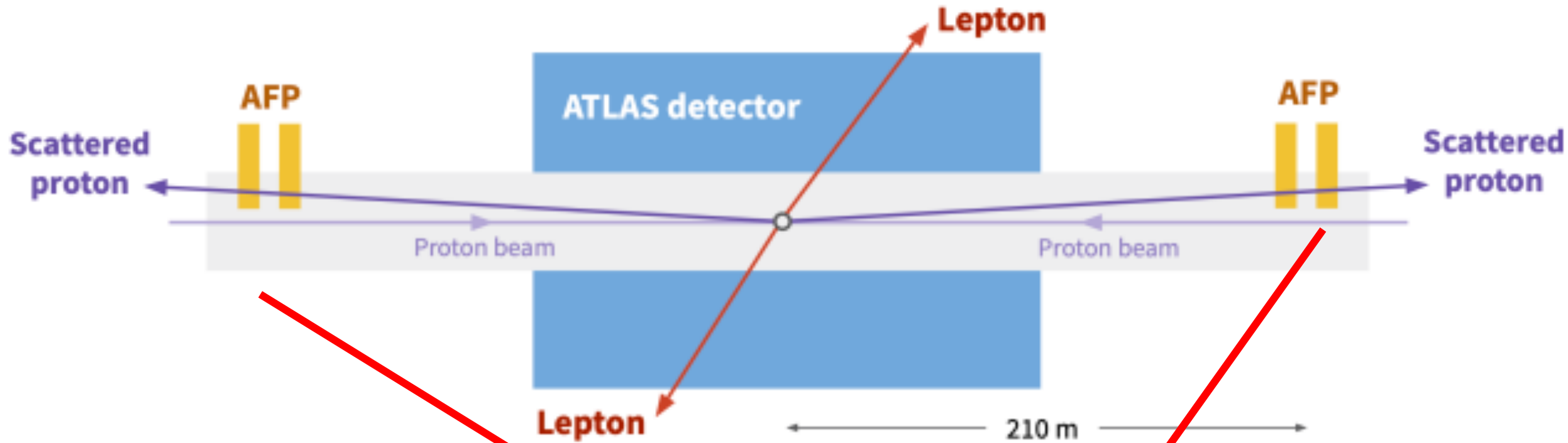
IFJ Kraków

Tomek Mróz

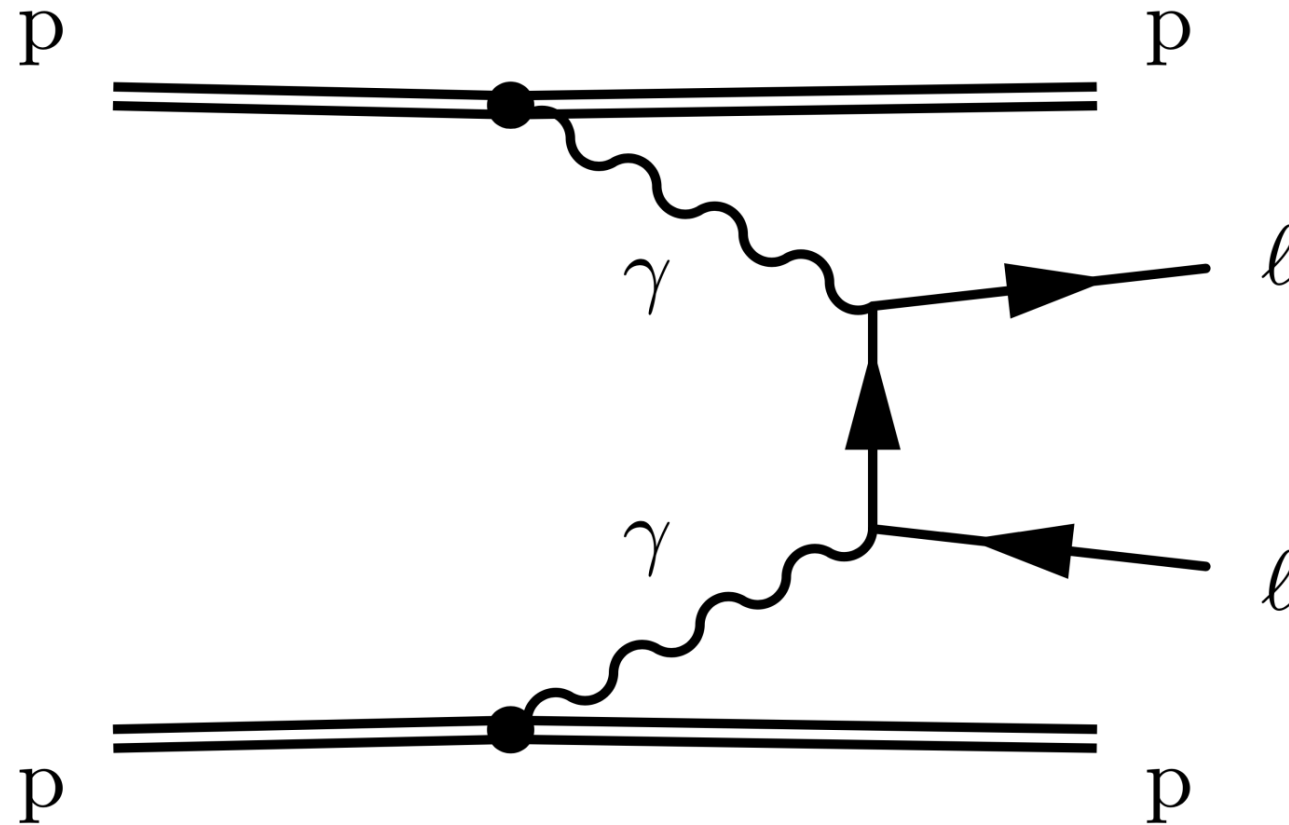
11 – 20 July 2024



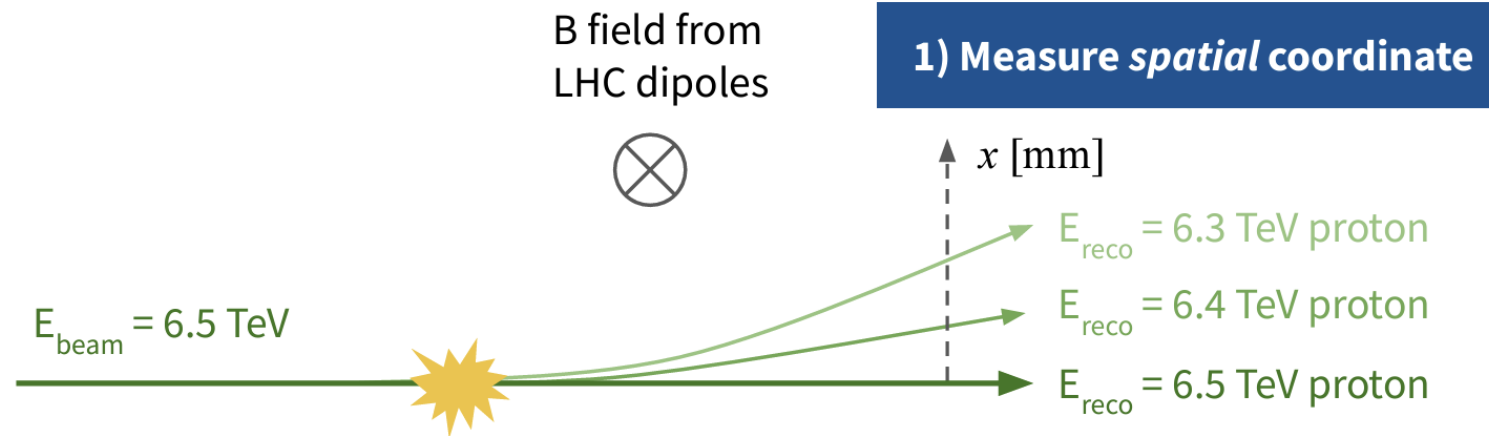
Schematic Diagram of Atlas Forward Detector



Light Turns into the Matter !!!

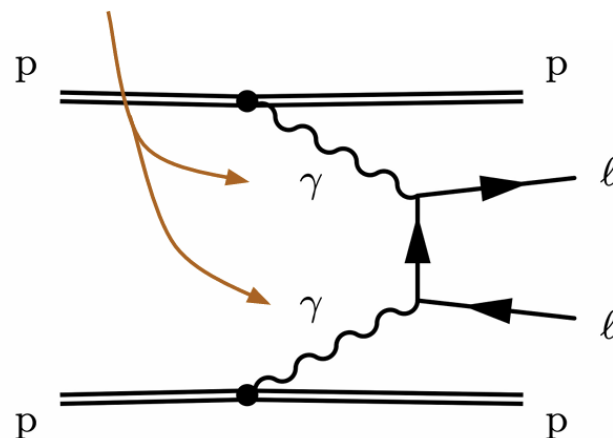


Global Alignment – Method



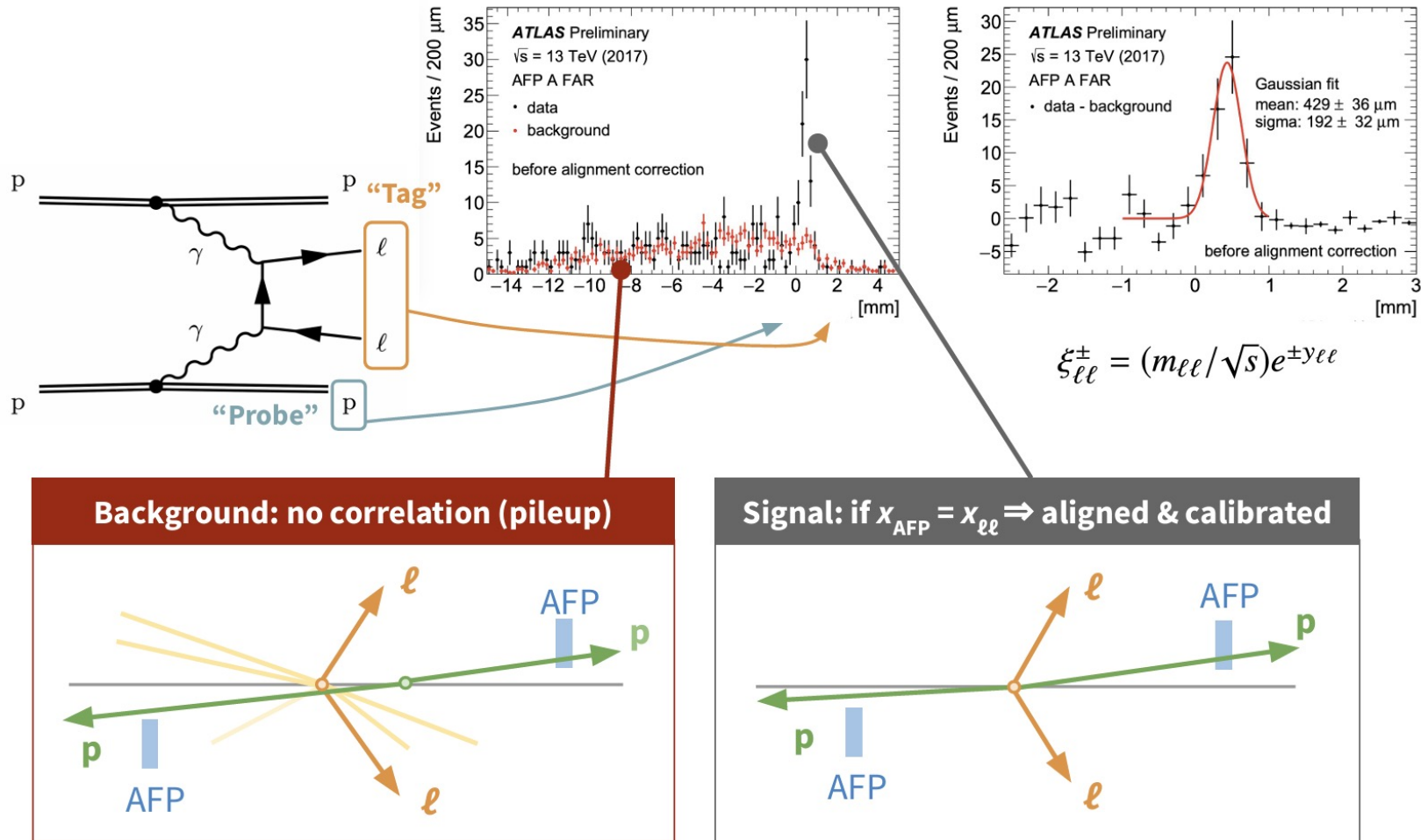
$$\xi_{\text{AFP}}^{\text{A,C}} = 1 - E_{\text{reconstructed}} / E_{\text{beam}}$$

2) Infer *energy lost by proton*



3) Know *initial photon energy*

Global Alignment – Method ctd.



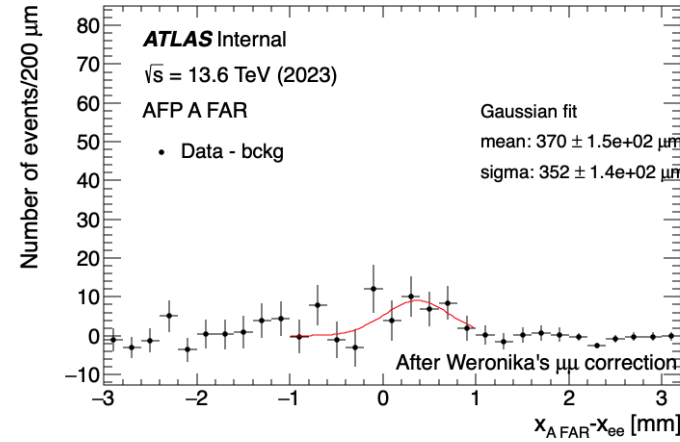
2023 Results

A-near shows the nicest result

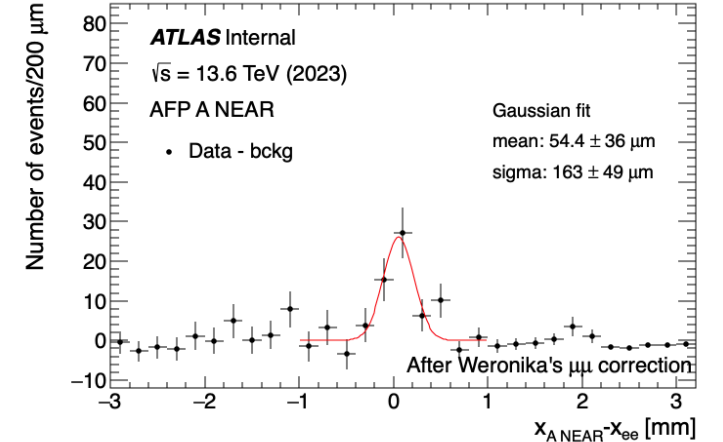
A Stations

- Far: $\mu = 370 \mu\text{m}$, $\sigma = 352 \mu\text{m}$
- Near: $\mu = 54.4 \mu\text{m}$, $\sigma = 36 \mu\text{m}$

FAR



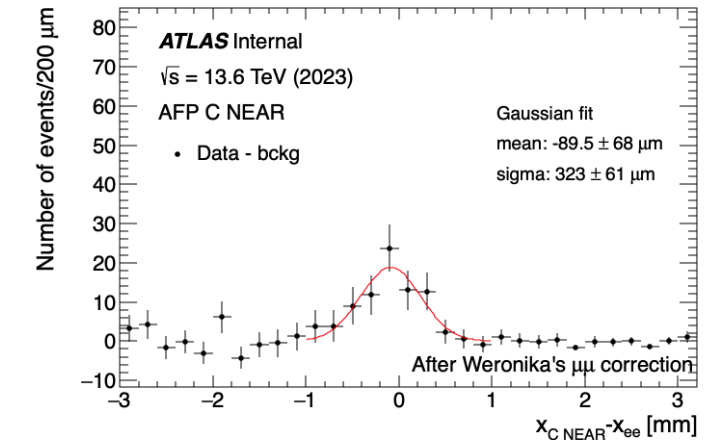
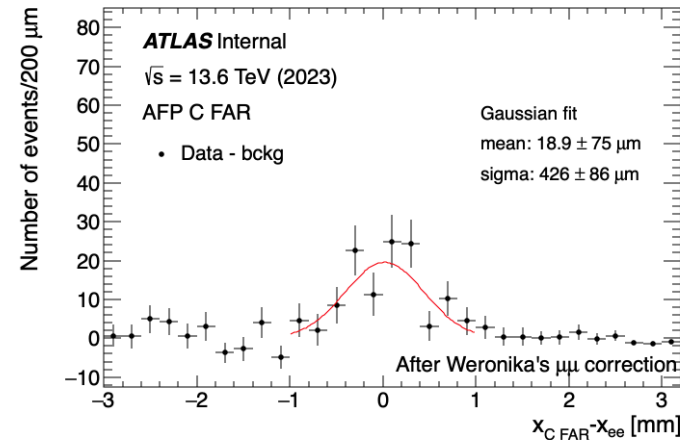
NEAR



A

C Stations

- Far: $\mu = 18.9 \mu\text{m}$, $\sigma = 426 \mu\text{m}$
- Near: $\mu = -89.5 \mu\text{m}$, $\sigma = 323 \mu\text{m}$



C

Summary

- **e^+e^- channel for AFP detector alignment**
- **AFP aligned previously using $\mu^+\mu^-$ channel**
- **Some misalignments detected**
- **Still work in progress**

Q & A

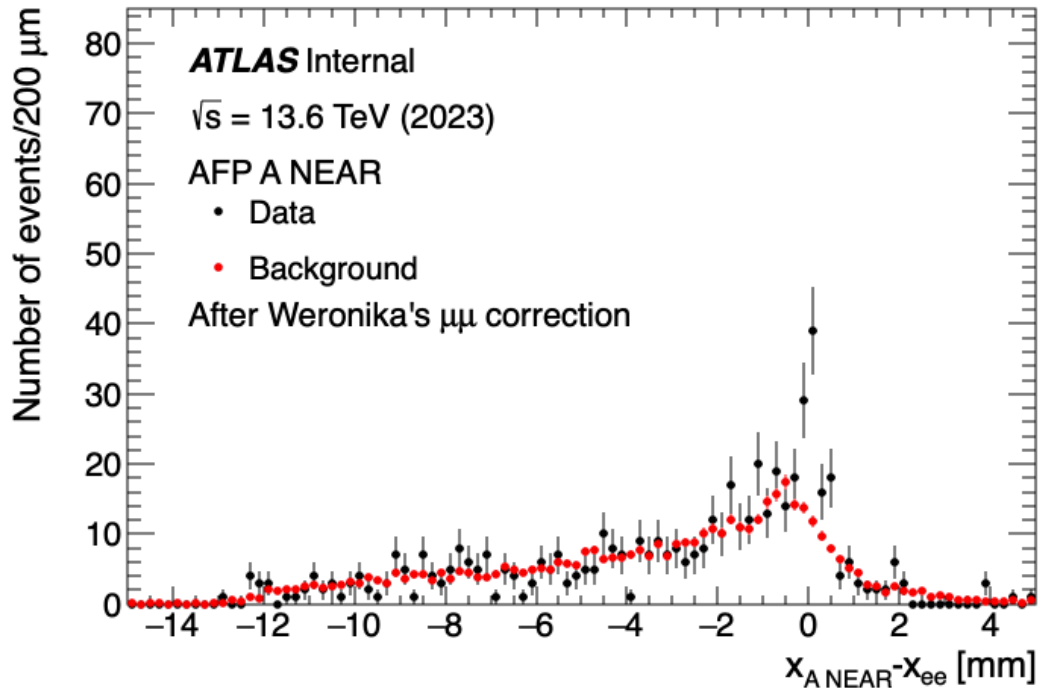
Thank for listening !



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Data Presentation - Example

Data & Background



Data – Background

